

Biology Induction work



We have come up with four different projects, each giving a flavour of one of the four Year 12 topics. We would like you to complete **any one of these** over the remainder of the Summer, to be handed in at the start of the new academic year in September.

Details of the projects are on the following slides, with what we might expect from you- ultimately we are looking for the best you can do. These are skills that we will be developing over the next two years, and there is no expectation for you to be experts immediately!

Project work and writeups are an important part of any science course, and this is a chance for you to show just how excited by Biology you are, and to impress us with your work and understanding. Produce something you can be really proud of!

Project: Choice 1

‘What factors increase the risk of developing _____ cancer, and why?’

- Choose one specific form of cancer to focus on
- This could be presented as a medical advice leaflet in a doctor’s surgery, or as a government broadcast
- What information is important to the general public?
- Find different research into risk factors for this specific cancer
- Can you reference these?
- Are these sources reliable? How many people were included in the study? Are the authors biased e.g. Tobacco companies?
- What is the biological explanation for why these factors increase risk?

Project: Choice 2

'How would you advise a couple that are carriers of a genetic disease?'

- This could be presented as a leaflet, or a script, or as a simple report
- Choose and research a **genetic** condition that has a significant impact on the wellbeing and life expectancy of sufferers e.g. Cystic Fibrosis, Huntington's, Haemophilia, Sickle Cell Anaemia...
- What genetic change causes the disease?
- How is it inherited? (dominant, recessive, sex linked?)
- Is there a prenatal screening programme to identify sufferers before birth? How is this done? What options are available if a test comes back positive?
- What symptoms does this genetic change cause, and how does it cause them? You can go into quite a lot of detail on this if you wish
- Can you reference any sources that you have used?

Project: Choice 3

‘Using your understanding of mitosis and meiosis, describe the lifecycle of ...’ Dandelions, butterflies... an organism of your choice!

- This could be presented as a leaflet for a wildlife sanctuary, or as a poster (though it will need to be large to fit all of the content in!) It is possible to do this through observation, by growing a plant or keeping caterpillars and writing about what you observe.
- Choose any organism at all, and describe it’s lifecycle (warning: some are more complex than others!). Start from gamete formation and fertilisation, and then through development both before and after birth.
- Make sure you include details of meiosis and mitosis, as both are crucial during development
- Pictures are recommended- can you reference these?
- **Extension:** can you find examples where development has gone wrong? What might have caused this?

Project: Choice 4

‘Design and complete an investigation into how a specific factor affects plant growth’.

- This is a practical project, and will need you to complete an investigation at home. It should be presented as a scientific report (Hypothesis, method, risk assessment, results tables, graphs, analysis, evaluation etc.)
- You need to design an investigation where you grow a plant species in different conditions and measure growth.
- What are your variables? How are you going to control/monitor these?
- What indicators of growth will you measure? How will you measure these?
- What are you expecting to see? Can you explain this using your scientific knowledge/research? If you use sources can you reference them?
- How are you going to analyse your data? What type of graph would be most appropriate?
Extension: Could you find out how to perform statistical tests?